REPORT TO THE TWENTY-FOURTH LEGISLATURE
STATE OF HAWAII
2007 REGULAR SESSION

IMPLEMENTATION OF CHAPTER 190D, HAWAII REVISED STATUTES OCEAN AND SUBMERGED LANDS LEASING

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DEPARTMENT OF AGRICULTURE
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IN RESPONSE TO SECTION 12 OF ACT 176, SESSION LAWS OF HAWAII 1999

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1.0 Introduction

Act 176, Session Laws of Hawaii (SLH) 1999, went into effect on July 1, 1999, allowing greater utilization of Hawaii's ocean resources for research and sustainable commercial development of open ocean aquaculture. In addition, the law requires the Department of Land and Natural Resources (DLNR), in cooperation with the Department of Agriculture (DOA), to submit a progress report to the Legislature on the implementation prior to each regular legislative session. This Report, the eighth in the series, addresses the progress with implementing ocean leasing for open ocean aquaculture and highlights related national activities in 2006.

2.0 National Activities

2.1 Background National Open Ocean Aquaculture Legislation

As many countries (e.g., Norway, Ireland, Scotland, Australia, Chile and Canada) aggressively begin moving aquaculture activities offshore and into the open ocean to meet the World's burgeoning demands for seafood, the lack of a regulatory framework for development of such activities in the United States (U.S.) becomes glaring (Cicin-Sain et al., 2001, Cicin-Sain et al., 2005). In response to this growing gap, the Department of Commerce (DOC) has become a strong advocate for marine aquaculture development. For example, DOC developed a long-term policy for expansion of the marine aquaculture industry, with objectives that seek to: 1) Increase the value of domestic aquaculture production from the present $900 million annually to $5 billion;2) Increase the number of jobs in aquaculture from the present estimate of 180,000 to 600,000;3) Develop aquaculture technologies and methods both to improve production and safeguard the environment, emphasizing where possible those technologies that employ pollution prevention;4) Double the value of non-food products and services produced by aquaculture in order to increase industry diversification;5) Enhance depleted wild fish stocks through aquaculture, thereby increasing the value of both commercial and recreational landings; and6) Increase exports of U.S. aquaculture goods and services from the present value of $500 million annually to $2.5 billion (U.S. DOC, 1999).

The most recent effort by the National Oceanic and Atmospheric Administration (NOAA) of DOC directly addressed the institutional and regulatory void for offshore aquaculture development by drafting legislation sent to Congress by President George W. Bush, on June 7, 2005. NOAA officials have indicated that the landmark aquaculture legislation, which implements the recommendations of the U.S. Ocean Commission on Ocean Policy and the President's U.S. Ocean Action Plan, will permit commercial farming of aquatic species by leasing of federal marine waters – the U.S. Exclusive Economic Zone (EEZ) from the limits of state waters to 200 miles. (U.S. Ocean Commission, 2004). The area

potentially affected is about 3.4 million square miles of U.S. controlled ocean waters.

The bill, entitled the National Offshore Aquaculture Act (S. 1195), was introduced by Senator Ted Stevens of Alaska and Senator Daniel Inouye of Hawaii. Generally, the bill would do the following according to NOAA:

- Authorize the Secretary of Commerce to issue offshore aquaculture permits and to establish environmental requirements where existing requirements under current law are inadequate;

- Stipulate that aquaculture products will not be subject to fishing regulations that restrict size, season, and harvest methods;

- Require the Secretary of Commerce to work with other federal agencies to develop and implement a coordinated permitting process for aquaculture in federal waters. This includes the authority to set additional environmental requirements to ensure that such development proceeds in an environmentally responsible manner that is consistent with stated policy to protect wild stocks and the quality of marine ecosystems, and is compatible with other uses;

- Authorize the establishment of a research and development program in support of offshore aquaculture; and

- Provide for enforcement of the Act.

The bill will not supersede existing laws such as those concerning navigation, offshore structures, management of fisheries, environmental quality, protected resources, and coastal zone management.

If the legislation is enacted, NOAA estimates that development of detailed implementing regulations should take two to three years, including the development and publication of draft rules, a review period, and publication of final rules. Environmental standards and other permit requirements will be designed with public input, and the process will allow for public review and comment through Federal Register notices as well as meetings with states, fishery management councils, and other forums (Hogarth, 2006). Implementation of this Act is expected to create an enabling environment for the offshore aquaculture industry in the U.S. in two ways: 1) Providing for the establishment of an efficient regulatory process; and 2) Providing for a research program specifically dedicated to the development of environmentally responsible offshore aquaculture technologies.

Development of the offshore segment of the U.S. aquaculture industry has been deemed essential by the President to raising supplies of domestically produced

seafood. Assuming current per capita consumption of about 16 pounds per person per year and current population projections, the U.S. will need an additional 2 million metric tons per year of seafood by 2025. If the public doubles the current consumption levels, as recommended by nutritionists, the U.S. will need an additional 4 to 6 million metric tons per year over current levels. Presently, 70% of U.S. seafood is imported, leading to an $8 billion trade deficit and dependency on foreign sources for this important dietary item and contribution to U.S. food security. Support is increasing within the Administration and Congress to increase domestic seafood supplies through offshore aquaculture development and move away from U.S. reliance on foreign imports (Aquaculture, 2006).

U.S. Secretary of Commerce Carlos Guiterrez is quoted regarding the National Offshore Aquaculture Act as saying:

"I am convinced that the United States must explore the potential of offshore aquaculture to help meet the growing demand for seafood in this country and to create jobs and economic opportunity for coastal communities. To support that, we are making the *National Offshore Aquaculture Act of 2005* a priority for this department and this country. We need to create this opportunity now."

2.2 Congressional Hearings 2006

On April 6, 2006, the Senate Commerce Committee's National Ocean Policy Study Subcommittee held the first hearing on S. 1195. Senator John Sununu of New Hampshire, chaired the hearing that examined the current proposals to regulate offshore aquaculture operations, discussed research in this field being conducted off the coasts of New England and Hawaii, and explored the impacts that expanded aquaculture operations would have on fishermen, seafood processors and consumers. Among the five distinguished panelists called before the Committee for this historic occasion was Randy Cates, President of Cates International Inc., who holds the first commercial open ocean aquaculture lease in Hawaii and the Nation that has been operating seven years. His testimony and answers to questions were well received by the Committee. A highlight of a few points in his testimony follows (Cates, 2006):

- "My experience with the success of the Hawaii Offshore Aquaculture Research Project opened up my eyes to the realization that we can farm our seafood and do it in an environmentally sustainable manner, while protecting our wild fish stocks."

- "Cates International Inc. was issued the first commercial open ocean aquaculture lease in the nation. Being first was not easy, nor should it have been, and I continue to feel a personal responsibility for how his new industry develops…"

- "Environmental issues are a huge concern in our industry and there are safeguards in place."

- "As this Committee and the Federal Government try to create a regulatory body for permitting, it is my belief that if the Federal Government needs to follow a path similar to that of Hawaii, the permitting process will likewise eliminate the potential for "bad actors." I am confident in the process and oversight of offshore fish farming in Hawaii; there is currently an adequate system of checks and balances."

- "As this committee considers legislation regarding open ocean fish farming, it is important to note what current research needs are, and what they will be. It will not make sense to pass such legislation unless we are willing to invest in this new industry, thus relieving pressure both on our wild stocks and on the trade of deficit."

Randy Cates was also able to add a statement for the record from Governor Linda Lingle of Hawaii regarding offshore aquaculture and the new legislation. It reads:

"Governor Lingle has been a strong supporter of the development of aquaculture within the State of Hawaii. She is proud that Cates International was the first U.S. firm to sign a commercial open ocean aquaculture lease in the United States. The expertise Hawaii has developed at the University of Hawaii, at the non-profit Oceanic Institute, and among numerous private sector aquaculture firms, has made our State a nationally and internationally recognized source of information and best practices in this field.

The Governor believes that the legislation proposed by President Bush being heard today, S. 1195 also known as the National Offshore Aquaculture Act, will significantly advance this industry, making it economically feasible for more firms to engage in the promising pursuit of open ocean caged fish farming."

On June 8, 2006, a second hearing was held by the same committee on S. 1195, chaired by Senator Sununu of Alaska. Testifiers included representatives from NOAA, the National Aquaculture Association, the Ocean Conservancy, and the Alaska Department of Fish and Game. The bill currently awaits further Senate action in 2007 and recruitment of House sponsors.

2.3 Pew Charitable Trusts Mariculture Study

The Pew Charitable Trusts and the Woods Hole Oceanographic Institution (WHOI) established the Marine Aquaculture Task Force in June 2005 to recommend national aquaculture standards for the future sustainable development of our oceans. This work is timed to support the development of a permitting system by NOAA for the EEZ. The Task Force was composed of

leaders from the worlds of science, industry, conservation and government, and was chaired by Rear Admiral (retired) Richard F. Pittenger. Dr. Bruce Anderson, President of the Oceanic Institute (OI), was appointed to provide a Hawaii perspective, as the State is a leader in development of offshore aquaculture.

The Task Force hosted a wide range of scientific and policy-making meetings; engaged leaders from government, industry and the environmental community. On January 19-21, 2006, the Task Force traveled to Hawaii at the urging of Dr. Anderson to engage in three days of presentations and field trips. Subject matter included:

- Aquafeeds and fisheries sources presented by Dr. Albert Tacon of the University of Hawaii (UH), a leading expert in aquaculture feeds.

- Hawaii's offshore industry experience presented by Randy Cates of Cates International and Neil Sims of Kona Blue Water Farms, the State's two commercial projects.

- Planning offshore aquaculture in Hawaii presented by John Corbin of DOA's Aquaculture Development Program (ADP) and Dr. Krishnawati Suryanata of UH.

The Chair of the Task Force indicated the information gathered from their visit to Hawaii would be very valuable to deliberations over standards. A report from the group is expected by the end of 2006.

3.0 Hawaii Activities

3.1 Hawaii Aquaculture Association Conference

The Hawaii Aquaculture Association (HAA) acts as the industry's trade association. Each year it organizes a day long conference and evening tasting of products. This year's theme focused on offshore aquaculture. The gathering, held on June 15, 2006 at the UH's Hawaii Institute of Marine Biology (HIMB), was attended by 125 people.

One of the featured speakers was Dr. Michael Rubino, Manager of NOAA's Aquaculture Program in Washington, D.C. Dr. Rubino noted that there is considerable momentum to develop U.S. aquaculture due to: 1) Growing global demand for seafood, 2) Nutritionists advocating eating more seafood, 3) An influx of new species and technologies, and 4) A strong need for resource restoration and enhancement. Among his key messages to the Hawaii audience were:

- There is a need to enhance domestic supply with safe, healthy seafood to meet growing demand;

- Aquaculture is an economic opportunity for coastal communities;

- We need to enable aquaculture, but within context of environmental stewardship;

- Strong roles are evident for states, Fishery Management Councils and stakeholders;

- Economic questions are being addressed; and

- Research is underway to answer the key development questions.

Another featured speaker was Dr. John Forster, internationally recognized aquaculture expert. He addressed global aquaculture and Hawaii's opportunities, noting Hawaii has some strengths supporting aquaculture expansion such as: 1) Huge ocean space, 2) Clean water, 3) Subtropical climate, 4) Multiple species to grow, 5) Technology leadership, 6) State support, 7) Island isolation, 8) A strong ocean leasing law and 9) Momentum. He also noted the industry has some important challenges such as: limited shallow water, limited land, high costs, island location and tangled regulations.

3.2 Research Funding

Central to establishment and expansion of Hawaii's offshore aquaculture industry has been a steady stream of research dollars from NOAA, particularly its National Marine Aquaculture Initiative (NMAI). NMAI is a special competitive grants program established in 1998 to support marine aquaculture development and has funded over $15 million in projects. The well known, multi-year Hawaii Ocean Aquaculture Research Project (HOARP), which demonstrated offshore cage culture of moi and credited with getting the local industry going, was a NMAI project.

In 2006, Hawaii's researchers have again received NMAI funding for a continuation project also called Hawaii Offshore Aquaculture Research Project. The collaborative project submitted by scientists at OI and UH will identify and address the next steps in the successful demonstration of sustainable offshore aquaculture in the U.S. Specifically, this phase of ongoing offshore aquaculture research will use existing open ocean aquaculture operations and research infrastructure in Hawaii to address critical scientific and regulatory issues in the genetic management of cultured stocks, examine fish health management approaches, and advance the environmental modeling of water quality around offshore cages.

The Project is one of 11 projects receiving $3.6 million, and is budgeted for $400,000.

3.3 Commercial Development Progress

3.3.1 Cates International Inc.

Cates International Inc. (CII) was formed in 1999 to pursue commercial open ocean aquaculture in state marine waters. The principles have had considerable experience with commercial fishing, diving, boating services, and salvage, as well as in the field of business. On April 10, 2000, CII submitted all its federal, state and county permits for a four-cage project using 28 acres of ocean two miles off Ewa Beach, Oahu to grow moi or the Pacific threadfin (Cates et al., 2001).

On March 9, 2001, approximately 12 months after DLNR accepted the application, the Board of Land and Natural Resources (BLNR) authorized the first open ocean aquaculture lease in the Nation (Cates et al., 2001). Since the lease approval, CII has deployed and operated four Sea Station 3000 submersible cages. Production has been somewhat inconsistent in 2006 due to difficulties with hatchery production of enough fingerlings to stock the cages. The majority of fish sold by CII were consumed by local markets, including many fine dining, “white table cloth” restaurants around Honolulu.

CII however, is projecting a brighter 2007. CII secured a lease for a site on the Leeward Coast of Oahu from DOA to build a large-scale moi hatchery capable of churning out 12 million fingerlings a year. Construction is well underway and should be complete early in 2007. With this kind of hatchery capacity, CII is looking to expand its offshore cage production operations, either through expansion at its existing site or locating a new site.

3.3.2 Kona Blue Water Farms

Kona Blue Water Farms (KBWF) was formed to implement open ocean cage culture of the kahala or amberjack. Hatchery techniques have been developed by KBWF through a $1.5 million federal grant from DOC’s Advanced Technology Program. Plans were to produce stocking fingerlings at the Kona hatchery and grow them out at an ocean cage site not too far from the land-based facility (Pacific Business News, 2001). Other hatchery technologies for other economically important species were also researched at the KBWF hatchery, located within the State’s Natural Energy Laboratory of Hawaii Authority (NELHA).

KBWF submitted their state and federal permit applications separately, with the State applications going in for an 81-acre site off Kona in November 2002 and approval for a lease by BLNR occurring November 5,

2003. Federal permit approvals from the U.S. Army Corps of Engineers were obtained on May 2004.

As 2004 came to a close, KBWF announced they had secured $4 million in investment to build an open ocean cage farm in conjunction with Aspen, Colorado-based Cornerstone Holdings (Honolulu Star Bulletin, 2004). Cornerstone Holdings President, Tom McCloskey, the former head of Horizon Organic Dairy, the World's largest organic dairy, has been a long-time advocate of sustainable agriculture and aquaculture.
Harvesting began on September 1, 2005 and sales, under KBWF's trade name "Kona Kampachi," have targeted both local and export markets. Acceptance of the product in Hawaii and on the Mainland has been phenomenal. In recognition of their achievements Governor Linda Lingle declared September 27th as Kona Kampachi Day.

In 2006, KBWF has continued to implement its business plan and now has six submersible cages deployed. Sales include many fine seafood restaurants across the country. They reported total investment to date of $8 million and the company now employs 33 people. The insatiable demand for the product and the success of the production technology have led the company to look in 2007 for a new site for a multi million-dollar expansion.

3.3.3 Pacific Ocean Ventures

Pacific Ocean Ventures (POV) is a local company formed to pursue open ocean cage farming of moi and kahala. The Company actively searched for a site around the State for more than two years and eventually settled on a location off Maui. Extensive environmental data collection was done at this site in preparation for writing a draft Environmental Assessment (EA) . Production technology planned is similar to CII, namely eight sea station cages that will be operated totally submerged.

At the end of 2004, POV submitted its Conservation District Use Application (CDUA) and draft EA to DLNR to start the permit process. DLNR did not accept the initial submittal, indicating that more information was needed on ecosystem and marine mammal impacts, and concerns over interaction with humpback whales. The site off Maui is located in the Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS), which was established in 1992 (NOAA, 2002).

POV made a presentation to the HIHWNMS' private/public advisory council, Sanctuary Advisory Council (SAC), to receive input on the project. At that meeting, held May 12, 2005, the SAC referred the matter to its Science and Conservation Committees for review and reporting at the next SAC meeting. The report, ultimately adopted by the SAC, noted

several concerns for further discussion: 1) Displacement of whales from habitat by the cages; 2) Attraction of predators such as sharks; 3) Collision of mating whales with the cages; 4) Interaction of young whales with the cages; and 5) Noise pollution from the work on the cages. The SAC recommended against the Maui site chosen by POV due to the perceived concentrations of whales during the season and suggested that the Company look elsewhere in and outside the Sanctuary boundaries.

In 2005 and 2006, POV focused on two areas: 1) Building a prototype hatchery for moi and kahala at NELHA, and 2) Looking at other sites around the state for the cage farm, both in and outside the Sanctuary. The hatchery at NELHA has produced significant amounts of moi fingerlings, which the Company has grown out on land and successfully test marketed. POV continues to evaluate several sites around the State for it's grow-out operation.

Regarding the SAC concerns about aquaculture in the Sanctuary, in 2006 the Chair of the SAC formed an Aquaculture Working Group (AWG) to collect information on aquaculture and discuss various issues. The intent of the Group is to direct, "face to face" dialogue with government and private sector aquaculture interests and gain a better understanding of concerns expressed by all stakeholders so informed comments can be made on offshore aquaculture projects. It was initially noted by the SAC that KBWF, which is located in the Sanctuary, has had one interaction with a whale to date, with no incident. The on-going collaborative approach taken by DLNR with KBWF is to put in place a cooperative whale monitoring plan to note and report any interactions and learn to what extent offshore farming is in conflict with humpback whale movements.

3.3.4 New Interest

While several projects targeted at farming tuna have ceased to be active, two new offshore projects have begun to take shape in 2006. One based on Maui is in the early stages of considering land-based sites for a hatchery and potential offshore sites. Species has yet to be determined. The other project is by a new company called Hawaii Oceanic Technology (HOT), who wants to grow tuna in futuristic, free floating, dynamically positioned cages off the Big Island. At this writing HOT, led by local venture capitalist Bill Spencer, has had an initial scoping meeting and is reviewing its next action.

4.0 Conclusion

Chapter 190D, HRS, was amended by the Legislature and signed into law in July of 1999, to allow Hawaii to test open ocean aquaculture leasing. Significant progress has been made in the ensuing seven and one half years. DLNR has

actively worked with DOA, to clarify the regulatory and leasing process to move aquaculture offshore in environmentally and economically sustainable ways. Moreover, the agencies have emphasized close environmental monitoring so that decision-makers and the public have the information to evaluate the impacts of ocean leasing for aquaculture, as a long-term, sustainable industry for Hawaii.

As more projects come forward, ADP, the State's aquaculture lead agency, will continue to play the role of the facilitator for discussions between companies requesting permits and leases and the regulatory agencies. ADP also assists companies in completing and packaging permit applications, e.g., holding initial permit scoping meetings with concerned agencies. In the future, ADP hopes to have a Geographic Information System-based ocean mapping system to assist projects in selecting the least problematic sites around the Islands (Young et al., 2003).

The Office of Conservation and Coastal Lands of DLNR (OCCL/DLNR) is the responsible agency for determining environmentally acceptable resource uses within the State's Conservation District, and the conditions for granting the CDUA permit. The Land Division of DLNR is the agency that issues and administers ocean leases. Ultimately, BLNR decides on the issuance of the specific CDUA permit and lease on a project-by-project basis, balancing environmental concerns with economic development benefits.

The State Department of Health, Clean Water Branch (CWB) also plays a key role in offshore development by virtue of its authority to regulate effluent discharges from cages. Ocean cages are considered point source discharges and farms that grow in excess of 100,000 pounds of product a year require a National Pollution Discharge Elimination System permit from CWB. CWB cooperatively works with individual open ocean aquaculture projects to formulate workable monitoring and reporting conditions for this new ocean use.

In terms of the role of the Federal Government, the U.S. Army Corps of Engineers' permitting process also determines how and where cages can be anchored in state marine waters. Further, the Corps currently is the main permitting agency for federal marine waters, i.e., the U.S. EEZ, three miles to 200 miles from shore. Presently, there is no federal leasing regime for the EEZ, however as discussed previously, NOAA has submitted leasing legislation to Congress.

The global realization that offshore aquaculture development is a solution to shortfalls in global fisheries production has taken firm hold (Davidson, 2006). National interest in allowing commercial aquaculture in state and federal marine waters continues to build, as evidenced by the ocean aquaculture legislation in Congress. Local industry participants hope the new and more intense focus will be supported with new federal research funding and a new local initiative, the Pacific Marine Aquaculture Center, is being organized to address this

opportunity. With the solid track record by the State, UH, and the private research and farming communities, Hawaii is well positioned to take advantage of this rapidly emerging sector of the U.S. aquaculture industry.

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